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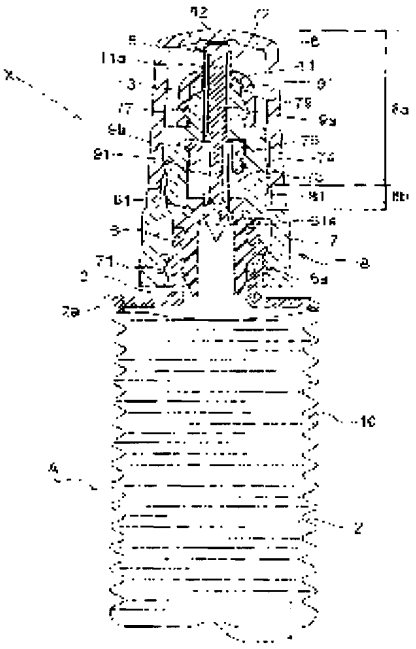
(54) POLLUTION PREVENTIVE CAP

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a pollution preventive cap which is structured to surely keep a container storing a liquid airtight before it is opened being mounted thereon and to prevent the inside of the container from being polluted after it is opened.
SOLUTION: This pollution preventive cap is provided with a base member 7 able to be mounted on an eye dropper A able to store a liquid, an over cap 8 able to be mounted on the member 7, a push-in member 9 which is inserted and held by the member 7 freely movably relative to the member 7, is provided on its side face with a groove 91 for guiding the liquid outside and is pushed toward the dropper A side by the over cap 8 for releasing the sealed condition of the dropper A, and a first tight contact member 11 provided at the tip end 77 of the member 7 allowing the flow out of the liquid tightly and outwardly in contact with the member 9.



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CLAIMS

[Claim(s)]
[Claim 1]
A base member with which a package body which can accommodate a fluid can be equipped,
It has an exaggerated cap which can be attached with said base member,
It is a pushing member in which pushing to said package body side is possible by said exaggerated cap that it has a slot which insertion maintenance is carried out at said base member so that it may become slidable to said base member, and leads said fluid to the side outside, and a sealed state of said package body should be canceled,
An antipollution cap provided with a close member for a start provided in a tip end part of said base member so that it might be close from a method of outside to said pushing member and an outflow of said fluid might be permitted.
[Claim 2]
The antipollution cap according to claim 1 in which said pushing member has formed a near end part of said package body needlelike.
[Claim 3]
The antipollution cap according to claim 1 or 2 which has carried out distributed allocation of the lobe which controls modification by the side of said base member of a close member for a start [said] at a tip end part of said base member and in which close arrangement of said lobe has been carried out to a close member for a start [said].
[Claim 4]
The antipollution cap according to any one of claims 1 to 3 which has provided a hermetic seal member held by said pushing member and said base member where said pushing member is pushed in.
[Claim 5]
The antipollution cap according to claim 4 which has fixed a periphery of said hermetic seal member by said first base member and said second base member in a state before it constitutes said base member from a first base member and a second base member and it pushes in said pushing member.
[Claim 6]
The antipollution cap according to any one of claims 1 to 5 in which said cap body is constituted so that contact to said base member is possible when it pushes in said cap body, after said exaggerated cap was formed by cap body and a cutting part which cuts out from the cap body concerned and is removed and removed said cutting part.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[Field of the Invention]
[0001]
This invention relates to the antipollution cap which equips with medical-application eye lotions the medical-application instillation container (an "instillation container" is only called hereafter) etc. which are accommodated enabling free instillation.
[Background of the Invention]
[0002]
As an instillation implement used for administration of drug solutions, such as the conventional instillation implement, especially medical-application eye lotions, For example, as shown in what is called a 3 piece type instillation implement that will be formed from three members as the whole instillation implement if the cap which equips with a pouring-in cylinder part the package body formed in the bell shape, and with which said package body is equipped is also included, and drawing 8, What is called bottle pack instillation implement X grade that makes the integral-moulding type instillation container A which has formed the pouring-in cylinder part 6 and the package body 10 in one with blow molding, vacuum forming, etc. equip with the cap B by screwing or fitting is used widely. The thing equipped with the inside plug part which formed said pouring-in mouth 6 at the tip of said pouring-in cylinder part 6 was also known (for example, refer to patent documents 1). As a raw material of such an instillation implement X, elastic thermoplastics is used from the ease of shaping, etc.
[0003]
In this kind of instillation implement X, when prescribing the drug solution in the instillation container A for the patient, the drum section 2 of said instillation container A (package body 10) is grasped by two fingertips, Dropping supply of the drug solution is carried out from said pouring-in mouth 6a by carrying out pressing operation of said drum section 2 to the container axis side, the pouring-in mouth 6a of said instillation container A holding into the administration posture which meets the eye for administration, and maintaining this posture.
[0004]
[Patent documents 1] JP,39-11991,Y (Drawing 1-2)
[Description of the Invention]
[Problem(s) to be Solved by the Invention]
[0005]
Since the eye which is a sharp organ is directly medicated with said drug solution, especially medical-application eye lotions also in a human body, maintaining at an aseptic condition till instillation is called for severely. Therefore, after said drug solution after each member of the instillation implement mentioned above sterilizes with steam sterilization, EO gaseous sterilization, etc. sterilizes with the sterilization by filtration etc. which used the membrane filter, it is necessary to carry out aseptic [of it] in the germfree room where strict conditions were ready.
[0006]
According to the instillation container (for example, said integral-moulding type instillation

container) in the conventional instillation implement mentioned above. Since external air and the drug solution inside said instillation container can be prevented from carrying out direct contact by equipping said instillation container with a cap and closing an instillation container after carrying out aseptic [of said drug solution] to said instillation container, Usually, said drug solution can be maintained at an aseptic condition until it cancels wearing of said cap and applies eyewash.

[0007]

However, if dropping administration of said drug solution is carried out from said pouring-in mouth after said instillation container opening, external air will flow into the inside of said instillation container from said pouring-in mouth only the part of the drug solution prescribed for the patient. At this time, there is a possibility that it may become impossible to secure an aseptic condition inside said instillation container by the microorganism etc. which are contained in external air, and said inside of an instillation container may be polluted (container internal contamination after instillation container opening).

In order to avoid such container internal contamination, the method of accommodating in said instillation container, where an antiseptic is beforehand added to said drug solution is used widely (preservation from decay of a drug solution).

[0008]

The trial which, on the other hand, prevents the incorporation into instillation containers, such as a microorganism contained in external air, is also made. It succeeds in this invention from this viewpoint.

[0009]

In order to prevent contact with external air, instillation containers with which a sealed state is certainly maintainable till use, such as a seal instillation container which does not provide beforehand said pouring-in mouth into which a drug solution is made to flow and which was unified thoroughly, are used widely, but it is desirable if there is a cap with which it can equip suitably for such an instillation container. Even if it provides said pouring-in mouth beforehand, it is desirable if it is the instillation implement constituted so that a sealed state can be certainly maintained till use.

[0010]

Therefore, the purpose of this invention has the composition in which a sealed state is certainly maintained till container opening by equipping the container which accommodated the fluid, and there is in providing the cap which prevents the contamination in the container after opening.

[Means for Solving the Problem]

[0011]

(Composition 1)

The 1st feature composition of an antipollution cap concerning this invention for attaining the above-mentioned purpose, It has a base member with which a package body which can accommodate a fluid can be equipped, and an exaggerated cap which can be attached with said base member, Have a slot which insertion maintenance is carried out at said base member so that it may become slidable to said base member, and leads said fluid to the side outside, and. With said exaggerated cap, that a sealed state of said package body should be canceled A pushing member in which pushing to said package body side is possible, It is close from a method of outside to said pushing member, a point provided with a close member for a start provided in a tip end part of said base member has an outflow of said fluid so that it may approve, and the operation effect is as follows.

[0012]

If a package body which accommodated a fluid is equipped with this cap by constituting an antipollution cap of this invention by a close member said base member, said exaggerated cap, said pushing member, and for a start [said], it can be considered as composition which maintains a sealed state certainly till container opening. This is based on the following reasons.

[0013]

For example, use as a package body of a sealed state a package body which accommodated a fluid, equip with said cap by equipping a package body of this sealed state with said base

member, and when using it. With said exaggerated cap attached to said base member. Since a sealed state of said package body is canceled by carrying out the posture change of said pushing member to a pushing posture which said pushing member stuffed into said package body side from a non-pushing posture in which it is not pushed into said pushing member to said package body side, An outflow of a fluid accommodated in said package body is attained from said package body.

[0014]

That is, since operation of pushing in said pushing member is not performed at the time of intact when a package body of a sealed state is equipped with an antipollution cap of this invention, contact with a fluid before container opening and exterior air is prevented, and a sealed state is certainly maintainable till container opening. And said cap is inserted in said package body by operation of pushing in said pushing member, and can cancel a sealed state of said package body certainly by it.

[0015]

Even if a package body which accommodated a fluid provides beforehand not only a package body of a sealed state but said pouring-in mouth, If it constitutes so that said pushing member may be made to insert in said pouring-in mouth and a sealed state can be certainly maintained till use, at the time of intact. Since operation of pushing in said pushing member is not performed, contact with a fluid before container opening and exterior air is prevented, and a sealed state is certainly maintainable till container opening. And said cap is inserted in said package body by operation of pushing in said pushing member, and can cancel a sealed state of said package body certainly by it.

[0016]

And a fluid which flowed out of said package body is led to the exterior by slot established in said pushing member side. Said fluid can be prevented from flowing out outside according to courses other than said slot at this time. Therefore, liquid leakage from a package body at the time of use can be controlled.

[0017]

For a start [said] which is provided in a tip end part of said base member, and is in a close state from a method of outside to said pushing member a close member and said pushing member, Since it estranges easily with a pressure of said fluid led by said slot and said fluid can be made to flow out outside, said fluid can be offered easily.

[0018]

If press of a drum section of said instillation container is stopped after carrying out outer flow appearance of the fluid of desired quantity, a close member and said pushing member will return to a close state for a start [said]. At this time, an inflow into said instillation container of exterior air can be prevented from taking place. Therefore, after carrying out outer flow appearance of the fluid of desired quantity by applying a cap of this composition. Since a course in which exterior air flows in a package body is intercepted, it becomes the composition which can prevent incorporation into instillation containers, such as a microorganism contained in external air after container opening, and prevention of contamination in a container after container opening is attained.

[0019]

(Composition 2)

In addition to the above-mentioned 1st feature composition, said pushing member has the 2nd feature composition of an antipollution cap concerning this invention in a point which has formed a near end part of said package body needlelike, and the operation effect is as follows.

[0020]

That is, even if it is a hermetic container with which an aseptic condition is certainly maintainable till use, in said pushing member, a sealed state can be canceled easily and certainly by forming a near end part of said package body needlelike by carrying out the posture change of said pushing member from a non-pushing posture to a pushing posture.

[0021]

(Composition 3)

The 3rd feature composition of an antipollution cap concerning this invention, Being in a point of having carried out distributed allocation of the lobe which controls modification by the side of said base member of a close member for a start [said] at a tip end part of said base member in addition to the above-mentioned 1st or 2nd feature composition, and having carried out close arrangement of said lobe to a close member for a start [said], the operation effect is as follows.

[0022]
When said pushing member is made into a pushing posture, there is a possibility that a close member may change into said base member side for a start [said], by friction with a close member said pushing member and for a start [said]. However, if distributed allocation of said lobe has been carried out at a tip part of said base member when a close member changes into said base member side for a start [said], a close member, said lobe, and said base member will contact the circumference almost uniformly [a tip end part] for a start [said]. Therefore, even if a close member changes for a start [said], it becomes difficult to cause distorted modification. Therefore, an outflow toward which said drug solution inclined can be prevented. When having carried out close arrangement of said lobe to a close member for a start [said] and a close member tends to change into said base member side for a start [said], a close member and said lobe can contact for a start [said] promptly, and a motion of a close member can be stopped for a start [said]. Therefore, even if a close member changes for a start [said], it can hold down to minor modification.
[0023]
(Composition 4)
In addition to which [of the above / 1-3rd] feature composition, the 4th feature composition of an antipollution cap concerning this invention is in a state where said pushing member was pushed in, and is in a point of having provided a hermetic seal member held by said pushing member and said base member, and the operation effect is as follows.
[0024]
That is, when said instillation container is equipped with said cap, said base member and said instillation container (for example, inside plug part) touch. At this time, since said base member and said inside plug part are not stuck firmly, they have a possibility that exterior air may flow.
[0025]
In this composition, exterior air which is going to flow from between said cap and said instillation containers can be certainly intercepted by providing a hermetic seal member held by said pushing member and said base member, where said pushing member is pushed in. Therefore, since contamination with air of a drug solution inside said instillation container can be prevented, contamination of said drug solution can be prevented effectively.
[0026]
Said hermetic seal member is in a state where said pushing member was pushed in, and since it is held by said pushing member and said base member, when said pushing member becomes a pushing posture, said hermetic seal member will be pressed by said pushing member. Therefore, since press of said hermetic seal member is avoidable till use, it can save good, without degrading a gestalt and an exterior air interception function of said hermetic seal member till use.
[0027]
(Composition 5)
The 5th feature composition of an antipollution cap concerning this invention, In a state before in addition to the above-mentioned 4th feature composition it constitutes said base member from a first base member and a second base member and it pushes in said pushing member, it is in a point which has fixed a periphery of said hermetic seal member by said first base member and said second base member, and the operation effect is as follows.
[0028]
That is, a posture of said hermetic seal member can be stabilized by fixing a periphery of said hermetic seal member by said first base member and said second base member. Therefore, when said pushing member is made into a pushing posture, said hermetic seal member can be

prevented from being held by said first base member and said second base member with an unusual posture, and an exterior air interception function can be exhibited certainly.
[0029]
(Composition 6)
The 6th feature composition of an antipollution cap concerning this invention, In addition to which [of the above / 1-5th] feature composition, said exaggerated cap A cap body, After being formed by a cutting part which cuts out from the cap body concerned and is removed and removing said cutting part, when said cap body is pushed in, said cap body is in a point constituted so that contact to said base member is possible, and the operation effect is as follows.
[0030]
That is, since said exaggerated cap is formed by cap body and a cutting part which cuts out from the cap body concerned and is removed, unless said cutting part is removed from said cap body, what said cap body is stuffed into said package body side for (pushing posture) is not made.
[0031]
Therefore, can prevent before use of said instillation container and further that said pushing member is pushed in since said cutting part is in contact with said base member at the time of use of said instillation container. Since said cap body is in contact with said base member, said pushing member can be prevented from being pushed in more than needed.
[Best Mode of Carrying Out the Invention]
[0032]
An embodiment of the invention is described based on a drawing below. The portion displayed with the same numerals as a conventional example in the drawing shows the same or considerable portion.
[0033]
The important section schematic diagram of each member which constitutes the instillation implement X mainly used for medical application drawing 1 - 7 and this instillation implement X is shown. This instillation implement X consists of the caps B which can be freely detached and attached to the instillation container A which has the package body 10 which can mainly accommodate drug solutions, such as medical-application eye lotions, as a fluid, and said instillation container A.
[0034]
The integral-moulding type instillation container A etc. which have formed the pouring-in cylinder part and the package body in one with the thing which equipped with the pouring-in cylinder part the package body in which said instillation container A was formed in the bell shape, blow molding, vacuum forming, etc. are used widely.
In this example, as shown, for example in drawing 1, the instillation container A equipped with the inside plug part 61 which formed said pouring-in mouth 61a at the tip of said pouring-in cylinder part 6 is illustrated. Therefore, what doubled the package body 10 and the inside plug part 61 serves as the instillation container (inside plug dotted eye container) A.
[0035]
Here, after said inside plug dotted eye container A (it is only hereafter considered as the instillation container A) carries out dropping administration of said drug solution from said pouring-in mouth 61a, shape tries to return said drug solution to the state before dropping administration by the stability of instillation container A itself [said], etc. At this time, external air flows into the inside of said instillation container A in which said drug solution is contained from said pouring-in mouth 61a only the part of the drug solution prescribed for the patient.
[0036]
Therefore, after carrying out dropping administration of said drug solution from said pouring-in mouth 61a, in order to prevent air from flowing into the inside of said instillation container A, two gestalten are illustrated in this embodiment.
[0037]
As the 1st gestalt, what forms said drum section 2 in bellows shape is mentioned. If are constituted in this way, and the bellows portion of the part of the drug solution prescribed for

the patient will cringe and this state will be maintained when dropping administration of said drug solution is carried out, prevention will become possible about external air flowing into the inside of said instillation container A from said pouring-in mouth 61a.
[0038]
Said package body 10 is made into the dual structure which has an outer layer and a inner layer as the 2nd gestalt, and what provided the vent which introduces exterior air into an outer layer is mentioned. As for the component of a inner layer, at this time, it is preferred to use what shape cannot restore easily compared with an outer layer. Even if exterior air will be introduced from said vent and said outer layer will return said drug solution to the state before dropping administration after carrying out dropping administration of said drug solution if constituted in this way, said inner layer, Since it is hard to restore shape, exterior air is not introduced, but the shape of said inner layer can maintain the shape after carrying out dropping administration of said drug solution. Therefore, prevention becomes possible about external air flowing into the inside of said instillation container A from said pouring-in mouth 61a.
[0039]
In this example, what forms said drum section 2 in bellows shape is illustrated.
Therefore, this instillation container A is constituted by having the pars basilaris ossis occipitalis 1 of the circle configuration which curves inside, the drum section 2 of the bell shape which stands in a row in the periphery of this, and bellows shape, the cylindrical neck 3 that follows the shoulder part 2a of this drum section 2, and the pouring-in cylinder part 6 which follows this neck 3 upper part. The periphery of said pouring-in cylinder part 6 is equipped with the male screw 6a. And it has equipped with the inside plug part 61 which formed said pouring-in mouth 61a at the tip of said pouring-in cylinder part 6.
[0040]
As a component of said instillation container A, there are thermoplastics, such as polyethylene, polyethylene polypropylene, polypropylene, polyethylene terephthalate, and polycarbonate, etc., and the fabricated whole instillation container A is constituted so that elastic deformation is possible.
When said package body 10 is made into the dual structure which has an outer layer and a inner layer, the component of an outer layer can be used as said thermoplastics, and the component of a inner layer can apply nylon, polyethylene, polypropylene, polyethylene terephthalate, etc.
[0041]
Here, the composition which forms the inside plug part 61 at the tip of said pouring-in cylinder part 6 is used widely for the reasons of a manufacturing cost becoming low compared with the case where the pouring-in mouth 61a is directly formed in said pouring-in cylinder part 6 with the application of blow molding, vacuum forming, etc. And in order to enable prevention of the inflow of exterior air, it is equipped with the inside plug part 61 so that it may stick with said pouring-in cylinder part 6. Therefore, if it constitutes so that the pushing member in the below-mentioned cap may be made to insert in said pouring-in mouth 61a, it becomes the instillation implement X which can maintain a sealed state till instillation, and said instillation container A can keep said drug solution certain to an aseptic condition till instillation.
[0042]
Here in the instillation implement X which can maintain a sealed state till instillation. Not only in the gestalt considered as the composition which provides said pouring-in mouth beforehand in said pouring-in cylinder part 6, and closes a pouring-in mouth with the member of a cap, It may be good also as the gestalt which seals said pouring-in mouth, and a gestalt considered as the composition which does not provide said pouring-in mouth beforehand in said pouring-in cylinder part 6, and it may be which composition as long as a sealed state is certainly maintainable till use.
[0043]
Said cap B is constituted so that it may screw in the male screw 6a of said instillation container A, enabling free attachment and detachment.
The details of said cap B are shown below.
[0044]

That is, said cap B is provided with the following.
As shown in drawing 1, it is the base member 7 with which the instillation container A which can accommodate a drug solution can be equipped.
The exaggerated cap 8 which can be attached with said base member 7.
On the exaggerated cap 8 concerned, have the slot 9a which insertion maintenance is carried out at said base member 7 so that it may become slidable to said base member 7, and leads said fluid to the side outside, and. It has the close member 11 for a start which was provided in the tip end part 77 of said base member 7 in the state where it was [that the sealed state of said instillation container A should be canceled] close to said instillation container A side from the method of outside to the pushing member 9 which can be pushed in, and said pushing member 9 with said exaggerated cap 8.
[0045]
The composition of each member of said cap B is explained in full detail below.
[0046]
(Base member)
Said base member 7 is constituted so that wearing to said instillation container A which has accommodated said drug solution is possible. Therefore, the thread groove part 71 which can be freely screwed in said male screw 6a is formed in the inner circumference portion of said base member 7.
[0047]
It has the first communicating hole 72 penetrated to the shaft core direction of said base member 7 as an example of the suitable embodiment for said base member 7, and it is possible to have composition which is open for free passage with said first communicating hole 72, and has the space part 73 of a major diameter from said first communicating hole 72. The below-mentioned pushing member 9 has penetrated said base member 7 by passing through said first communicating hole 72 and said space part 73.
[0048]
When the first height 74 of a base member for equipping said base member 7 with the below-mentioned exaggerated cap 8 is formed in an outside surface and the further below-mentioned pushing member 9 becomes a pushing posture, in order to secure this pushing posture, It is possible to form the second height 76 of a base member in the inner circle wall of said base member 7.
[0049]
As a component of said base member 7, it is possible to consider it as polypropylene, polyethylene, etc.
[0050]
Not only the mounting method to screw but the mounting method which fits in can apply wearing with said base member 7 and said instillation container A. At this time, the composition (for example, the height is provided) in which fitting wearing is possible can apply to the part applicable to said male screw 6a, and the part applicable to said thread groove part 71 suitably.
[0051]
Distributed allocation of the lobe 79 which controls the modification by the side of said base member 7 of the close member 11 for a start [below-mentioned] is carried out at the tip end part of said base member 7, and, as for said lobe 79, it is preferred to carry out close arrangement to the close member 11 for a start [said], and to constitute.
[0052]
When said pushing member 7 is made into a pushing posture, there is a possibility that the close member 11 may change into said base member 7 side for a start [said], by friction with the close member 11 said pushing member 7 and for a start [said]. However, if distributed allocation of said lobe 79 has been carried out at the tip part of said base member 7 when the close member 11 changes into said base member 7 side for a start [said] (drawing 3), the close member 11 and said lobe 79 will contact almost uniformly [the circumference of the tip end part of said base member 7] for a start [said]. Therefore, even if the close member 11 changes for a start [said], it becomes difficult to cause distorted modification. Therefore, the outflow

toward which said drug solution inclined can be prevented.
When having carried out close arrangement of said lobe 79 to the close member 11 for a start [said] and the close member 11 tends to change into said base member 7 side for a start [said], the close member 11 and said lobe 79 can contact for a start [said] promptly, and a motion of the close member 11 can be stopped for a start [said]. Therefore, even if the close member 11 changes for a start [said], it can hold down to minor modification.
[0053]
(Exaggerated cap)
In said base member 7, said exaggerated cap 8 is constituted so that attachment is possible. Attachment to said base member 7 can be carried out by methods, such as screwing and fitting. At this time, the thread groove part which can respond to screwing or fitting wearing or the height of said exaggerated cap 8 is formed in said base member 7 outside surface. In this example, in order to enable fitting wearing, the inside height 81 is formed in said base member 7 outside surface at the first height 74 of a base member, and said exaggerated cap 8 inside, respectively.
[0054]
As an example of the suitable embodiment of said exaggerated cap 8, the cap body 8a, After being formed by the cutting part 8b which cuts out from the cap body 8a concerned, and is removed and removing said cutting part 8b, when said cap body 8a is pushed in, said cap body 8a is able to constitute so that the contact to said base member 7 is possible.
[0055]
That is, the exaggerated cap 8 formed by the cap body 8a and the cutting part 8b is attached to said base member 7, and said exaggerated cap 8 and said pushing member 9 are maintained at the non-pushing posture which is not stuffed into said instillation container A side at this time. By and the thing which it removes by cutting out said cutting part 8b from said cap body 8a (drawing 2 (**)), and is done for a posture change after that to the pushing posture into which said cap body 8a is stuffed at said instillation container A side (drawing 2 (**)). Said pushing member 9 can be prevented from said cap body 8a contacting said base member 7, and being pushed in more than needed.
[0056]
Since attaching to said base member 7 is preferred as for said exaggerated cap 8 so that said a part of base member 7 which contains the close member 11 for a start [below-mentioned] at least may be covered, a bell shape is a suitable gestalt.
[0057]
As a component of said exaggerated cap 8, it is possible to consider it as polypropylene, polyethylene, etc.
[0058]
It is preferred to form the exaggerated cap heights 82 into which said annular heights 11a can invade in the wall at the tip said exaggerated cap 8.
[0059]
(Pushing member)
Insertion maintenance of said pushing member 9 is carried out at said base member 7 so that it may become slidable to said base member 7. Said pushing member 9 has the slot 91 which leads said fluid to the exterior on the side. This slot 91 can provide [1 or] two or more on said pushing member 9 side. As mentioned above, said pushing member 9 is penetrated through said first communicating hole 72 and said space part 73 of said base member 7, but said pushing member 9 is made to contact the inner circumference side of said base member 7 at this time, so that said slot 91 may be secured.
[0060]
Therefore, for example, said pushing member 9 can be considered as the shape which contacts the inner skin of the cylindrical axis part 9a which contacts said first communicating hole 72, and said space part 73, and has the major diameter 9b of a major diameter from said axis part, as shown in drawing 1 and drawing 4.
[0061]

And if said exaggerated cap 8 is stuffed into said instillation container A side in order to cancel the sealed state of said instillation container A (refer to drawing 2), said pushing member 9 will be stuffed into said instillation container A side with said exaggerated cap 8 (pushing posture). At this time, said pushing member 9 is pressed to the inside plug part 61 provided at the tip of said pouring-in cylinder part 6 of said instillation container A, and carries out slide movement of said pouring-in mouth 61a inner skin of said inside plug part 61. A sealed state can be canceled if said slot 91 is open for free passage with the space inside said instillation container in which said drug solution is contained at this time. And the outflow of the drug solution inside said instillation container A is attained from said slot 91.

[0062]

Here, what formed the near end part of said instillation container A needlelike is illustrated as shape of said pushing member 9. With constituting in this way, even if it is a case where it is a perfect hermetic container in which the pouring-in mouth 61a is not formed in the inside plug part 61 provided at the tip of said pouring-in cylinder part 6, punching can be made easy to produce in said inside plug part 61, and the sealed state of said instillation container A can be canceled easily.

The smaller one of the path of this needlelike portion is preferred, and makes it actually the range of about phi1-3mm.

Under the present circumstances, if the crevice of closed-end conical shape where an inside diameter becomes large is become depressed and formed in said pouring-in cylinder part 6 as the tip side, the shape and the size of an inlet which are produced by punching can be made uniform.

[0063]

When it is the container of a gestalt with which the sealed state is maintained by sealing said pouring-in mouth 61a as another gestalt, said pushing member 9 applies the gestalt which can remove this plug. It is possible to specifically fabricate so that the end part by the side of said instillation container A of said pushing member 9 may become flat shape. And since said plug is stuffed into the inside of said instillation container A and it can remove from said pouring-in cylinder part 6 when said pushing member 9 is pushed in, the sealed state of said instillation container A can be canceled easily.

[0064]

As a component of said pushing member 9, in order to cancel the sealed state of said instillation container A, a suitable material, for example, thermoplastics stronger than said instillation container A etc., is applicable.

[0065]

(First close member)

The close member 11 is fixed to the tip end part 77 of said base member 7 for a start [said] in the state where it was close from the method of outside to said pushing member 9. However, the close member 11 is not being fixed only by being close to said pushing member 9 for a start [said]. Therefore, for a start [said], easily, the close member 11 and said pushing member 9 are constituted so that alienation is possible. (Refer to drawing 5).

[0066]

If the second space part 13 that is the space surrounded for a start [said] by the close member 11, said pushing member 9, and said base member 7 is formed at this time, said drug solution can be stored in this second space part 13 temporarily, before flowing out outside.

[0067]

Have carried out distributed allocation here at the tip part of said base member 7, and the lobe 79 which controls the modification by the side of said base member 7 of the close member 11 for a start [said] and said lobe 79, When close arrangement has been carried out to the close member 11 for a start [said], the space surrounded by the close member 11 and said pushing member 7 for a start [said] between said lobe 79 serves as sky Mabe. On the other hand, since close arrangement of said lobe 79 has been carried out to the close member 11 for a start [said], the space surrounded by the close member 11 and said pushing member said lobe 79 and for a start [said] serves as a small space part.

Therefore, the space which can store said drug solution temporarily is securable in said sky Mabe and said small space part.
[0068]
In order to improve the piece of a drug solution and to make one drop measure regularity (within the limits of 25-50microper one drop measure L), it is preferred to form the annular heights 11a in the way side outside the part by which the close part 11 and said pushing member 9 are close for a start [said].
[0069]
And for a start [said], the close member 11 is fixed to the tip end part 77 of said base member 7, and in order to have easily composition which can be estranged, being formed by elastic materials, such as rubber, is preferred [said pushing member 9 / the close member 11] for a start [said].
[0070]
As mentioned above, said cap B is constituted by the close member 11 said base member 7, said exaggerated cap 8, said pushing member 9, and for a start [said], and when said cap B has such composition, it can use the instillation container A of the sealed state which accommodated the fluid.
[0071]
That is, when using the instillation implement X which comprises the instillation container A which has the composition mentioned above, and the cap B, the sealed state of said instillation container A is canceled by pressing said exaggerated cap 8 to said instillation container A side, and carrying out the posture change of said pushing member 9 from a non-pushing posture to a pushing posture. At this time, when said slot 91 is open for free passage with the space inside said instillation container in which said drug solution is contained, the sealed state of said instillation container A is canceled. The outflow of the drug solution accommodated in said instillation container A by this is attained from said instillation container A. Therefore, simple operation of pushing in said pushing member 9 can cancel the sealed state of said instillation container A easily.
[0072]
And a drug solution is made to flow out of said instillation container A by pressing the drum section 2 of said instillation container A with a finger etc. in the state where said exaggerated cap 8 was made to secede from said base member 7. The drug solution which flowed out of said instillation container A is led to the exterior by said slot 91 established in said pushing member 9. Since said drug solution does not flow out outside according to any courses other than said slot 91 at this time, the liquid leakage from said instillation container A can be prevented.
[0073]
If said drug solution led by said slot 91 is stored in said second space part 13 temporarily and said drug solution is [drug solution] full of said second space part 13, The pressure of said drug solution serves as positive pressure, the close member 11 and said pushing member 9 are estranged easily for a start [said] in a close state, and said drug solution flows out outside (drawing 5).
[0074]
If press of the drum section 2 of said instillation container A is stopped after carrying out outer flow appearance of the desired drug solution, since the drug solution which it was full of in said second space part 13 returns to the usual pressure, the close member 11 and said pushing member 9 will return to a close state for a start [said]. At this time, the outer flow appearance of said drug solution stops, and an inflow into said instillation container A of exterior air can be prevented from taking place. Therefore, it becomes the composition which can prevent the incorporation into instillation containers, such as a microorganism contained in external air after container opening, and prevention of the contamination in a container after container opening is attained.
[0075]
[Another example 1]
In the example mentioned above, it is possible to form the hermetic seal member 100 held by

said pushing member 9 and said base member 7, where said pushing member 9 is pushed in (refer to drawing 6).
[0076]
Since wearing with the inside plug part 61 which formed said pouring-in mouth 61a, and the pouring-in cylinder part 6 is usually stuck firmly, most things which exterior air invades from between the inside plug part 61 and said pouring-in cylinder parts 6 do not have it.
On the other hand, when said instillation container A is equipped with said cap B, said base member 7 and said inside plug part 61 touch. At this time, since wearing with said inside plug part 61 and said pouring-in cylinder part 6 has not stuck more firmly said base member 7 and said inside plug part 61, they have a possibility that exterior air may flow from between said base member 7 and said inside plug parts 61.
[0077]
At this time, the exterior air which is going to flow from between said base member 7 and said inside plug parts 61 can be certainly intercepted by providing and constituting the hermetic seal member 100 held by said pushing member 9 and said base member 7, where said pushing member 9 is pushed in. Therefore, contamination with the air of the drug solution inside said instillation container A can be prevented effectively.
[0078]
Said hermetic seal member 100 is in the state where said pushing member 9 was pushed in, and since it is held by said pushing member 9 and said base member 7, when said pushing member 9 becomes a pushing posture, said hermetic seal member 100 will be pressed by said pushing member 9. Therefore, since press of said hermetic seal member 100 is avoidable till use, it can save good, without degrading the gestalt and exterior air interception function of said hermetic seal member 100 till use.
[0079]
If it is constituted, for example from rubber packing and a foaming sheet, since said hermetic seal member 100 can intercept exterior air certainly, it is preferred.
[0080]
[Another example 2]
In the state before it constitutes said base member 7 from the first base member 7a and the second base member 7b and it pushes in said pushing member 9 in composition given in the above-mentioned exception example 1, It is possible to fix the periphery of said hermetic seal member 100 by said first base member 7a and said second base member 7b (refer to drawing 7).
[0081]
Thus, by fixing the periphery of said hermetic seal member 100 by said first base member 7a and said second base member 7b, the posture of said hermetic seal member 100 can be stabilized. Therefore, when said pushing member 9 is made into a pushing posture, said hermetic seal member 100 can be prevented from being held with an unusual posture by said first base member 7a and said second base member 7b, and an exterior air interception function can be exhibited certainly.
[0082]
If this invention is not limited to the above-mentioned embodiment and the same operation effect is done so, it can change each part composition suitably.
[Brief Description of the Drawings]
[0083]
[Drawing 1]The schematic diagram showing the state where a cap and package body of this invention carried out screwing unification
[Drawing 2]schematic diagram (**) when carrying out a posture change from a non-pushing posture to a pushing posture -- non-pushing posture (cutting part is removed from exaggerated cap) (**) -- a pushing posture (a cap body contacts a base member)
[Drawing 3]The schematic diagram of the lobe by which distributed allocation was carried out at the tip end part of the base member
[Drawing 4]The schematic diagram of a pushing member
[Drawing 5]An important section schematic diagram in case a drug solution trickles at the time

of instillation
[Drawing 6]An important section schematic diagram when a hermetic seal member is provided between a pushing member and a base member
[Drawing 7]An important section schematic diagram when a base member is constituted from a first base member and a second base member and the periphery of a hermetic seal member is fixed by the first base member and the second base member
[Drawing 8]The section schematic diagram of the conventional instillation implement
[Description of Notations]
[0084]
7 Base member
77 Tip end part
8 Exaggerated cap
9 Pushing member
91 Slot
10 Package body
11 It is a close member for a start.
A Instillation container
B Cap
X Instillation implement

[Translation done.]

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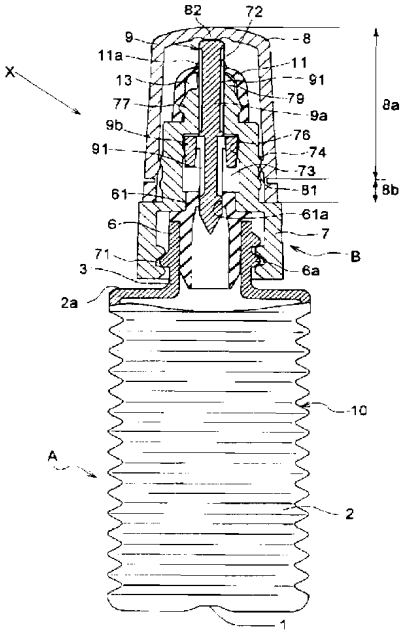
(54)【発明の名称】汚染防止キャップ

(57)【要約】
【課題】　液体を収容した容器に装着することにより容器開封時まで確実に密封状態を維持可能な構成を有すると共に、開封後における容器内の汚染を防止する汚染防止キャップを提供する。
【解決手段】　液体を収容可能な点眼容器Ａに装着可能な基体部材７と、基体部材７に取付け可能なオーバーキャップ８と、基体部材７に対して摺動自在となるよう基体部材７に挿入保持され、その側面に液体を外部へ導く溝部９１を有すると共に点眼容器Ａの密封状態を解除すべくオーバーキャップ８によって点眼容器Ａの側へ押込可能な押込部材９と、押込部材９に対し外方から密接し液体の流出は許容するよう基体部材７の先端部分７７に設けた第一密接部材１１とを備える。
【選択図】　図１



【特許請求の範囲】
【請求項１】
液体を収容可能な容器本体に装着可能な基体部材と、
前記基体部材に取付け可能なオーバーキャップとを備え、
前記基体部材に対して摺動自在となるよう前記基体部材に挿入保持され、その側面に前記液体を外部へ導く溝部を有すると共に、前記容器本体の密封状態を解除すべく前記オーバーキャップによって前記容器本体の側へ押込可能な押込部材と、
前記押込部材に対し外方から密接し、前記液体の流出は許容するよう前記基体部材の先端部分に設けた第一密接部材とを備えた汚染防止キャップ。
【請求項２】
前記押込部材は、前記容器本体の側の一端部を針状に形成してある請求項１に記載の汚染防止キャップ。
【請求項３】
前記第一密接部材の前記基体部材側への変形を抑制する突出部を、前記基体部材の先端部分に分散配設してあり、かつ、前記突出部は、前記第一密接部材に近接配置してある請求項１又は２に記載の汚染防止キャップ。
【請求項４】
前記押込部材が押込まれた状態で、前記押込部材と前記基体部材とで保持される密封部材を設けてある請求項１～３の何れか一項に記載の汚染防止キャップ。
【請求項５】
前記基体部材が、第一基体部材と第二基体部材とで構成してあり、前記押込部材を押込む前の状態において、前記密封部材の外周を前記第一基体部材と前記第二基体部材とで固定してある請求項４に記載の汚染防止キャップ。
【請求項６】
前記オーバーキャップが、キャップ体と、当該キャップ体から切り取り除去される切取部とで形成され、前記切取部を除去した後、前記キャップ体を押込んだ際に前記キャップ体が前記基体部材に当接可能に構成してある請求項１～５の何れか一項に記載の汚染防止キャップ。
【発明の詳細な説明】
【技術分野】
【０００１】
本発明は、医療用点眼液を点眼自在に収容する医療用点眼容器（以下、単に「点眼容器」と称する）等に装着する汚染防止キャップに関する。
【背景技術】
【０００２】
従来の点眼具、特に医療用点眼液等の薬液の投与に使用される点眼具としては、例えば、中空円筒状に形成された容器本体に注液筒部を装着し、前記容器本体に装着するキャップも含めると点眼具全体として３部材から形成される、所謂３ピース型点眼具や、図８に示したように、ブロー成形や真空成形等により注液筒部６と容器本体１０とを一体に形成してある一体成形型点眼容器Ａにキャップ Ｂを螺合或いは　合等により装着させる、所謂ボトルパック点眼具Ｘ等が汎用されている。また、前記注液筒部６の先端に前記注液口６を設けた中栓部を装着するものも知られていた（例えば、特許文献１参照）。このような点眼具Ｘの素材としては、成形の容易さ等から軟質の熱可塑性樹脂が用いられている。
【０００３】
この種の点眼具Ｘでは、点眼容器Ａ内の薬液を投与する場合、前記点眼容器Ａ（容器本体１０）の胴部２を二本の指先で把持して、前記点眼容器Ａの注液口６αが投与対象の眼に対面する投与姿勢に保持し、この姿勢を維持しつつ前記胴部２を容器軸線側に押圧操作することにより、前記注液口６αから薬液を滴下供給する。
【０００４】
【特許文献１】実公昭３９－１１９９１号公報（第１～２図）

【発明の開示】
【発明が解決しようとする課題】
【０００５】
前記薬液、特に医療用点眼液は、人体における特に鋭敏な器官である目に直接投与されるために、点眼時まで無菌状態に保つことが厳しく求められている。そのため、上述した点眼具の各部材は蒸気滅菌法やＥＯガス滅菌法等により滅菌した後、及び前記薬液はメンブレンフィルタを用いた　過滅菌法等により滅菌した後、厳格な条件の整った無菌室で無菌充填する必要がある。
【０００６】
上述した従来の点眼具における点眼容器（例えば、前記一体成形型点眼容器）によれば、前記薬液を前記点眼容器に無菌充填した後、前記点眼容器にキャップを装着して点眼容器を封止することにより、外部の空気と前記点眼容器内部の薬液とが直接接触することを防止できるため、通常は、前記キャップの装着を解除して点眼する時まで前記薬液を無菌状態に保つことができる。
【０００７】
しかし、前記点眼容器開封後に前記注液口から前記薬液を滴下投与すると、投与した薬液の分だけ外部の空気が前記注液口から前記点眼容器内部に流入する。この時、外部の空気に含まれる微生物等により前記点眼容器内部の無菌状態が確保できなくなり、前記点眼容器内部が汚染される虞がある（点眼容器開封後の容器内部汚染）。
このような容器内部汚染を避けるために、前記薬液に予め防腐剤を添加した状態で前記点眼容器に収容する方法が汎用されている（薬液の防腐）。
【０００８】
一方、外部の空気に含まれる微生物等の点眼容器内への取り込みを防ぐ試みもなされている。本発明は、この観点に立って為されたものである。
【０００９】
外部の空気との接触を防ぐため、薬液を流出させる前記注液口を予め設けない完全に一体化された密封点眼容器等、使用時まで密封状態を確実に維持できる点眼容器が汎用されているが、このような点眼容器に好適に装着可能なキャップがあれば望ましい。また、前記注液口を予め設けたとしても、使用時まで密封状態を確実に維持できるように構成してある点眼具であれば望ましい。
【００１０】
従って、本発明の目的は、液体を収容した容器に装着することにより容器開封時まで確実に密封状態を維持する構成を有すると共に、開封後における容器内の汚染を防止するキャップを提供することにある。
【課題を解決するための手段】
【００１１】
（構成１）
上記目的を達成するための本発明に係る汚染防止キャップの第１特徴構成は、液体を収容可能な容器本体に装着可能な基体部材と、前記基体部材に取付け可能なオーバーキャップとを備え、前記基体部材に対して摺動自在となるよう前記基体部材に挿入保持され、その側面に前記液体を外部へ導く溝部を有すると共に、前記容器本体の密封状態を解除すべく前記オーバーキャップによって前記容器本体の側へ押込可能な押込部材と、前記押込部材に対し外方から密接し、前記液体の流出は許容するよう前記基体部材の先端部分に設けた第一密接部材とを備えた点にあり、その作用効果は以下の通りである。
【００１２】
本発明の汚染防止キャップを、前記基体部材、前記オーバーキャップ、前記押込部材、及び、前記第一密接部材により構成することにより、このキャップを、液体を収容した容器本体に装着すれば、容器開封時まで確実に密封状態を維持する構成とすることができる。これは、以下の理由による。
【００１３】

例えば、液体を収容した容器本体を密封状態の容器本体とし、この密封状態の容器本体に、前記基体部材を装着することにより前記キャップを装着し、使用する際には、前記基体部材に取付けられた前記オーバーキャップにより、前記押込部材を前記押込部材が前記容器本体の側へ押込まれていない非押込姿勢から前記押込部材が前記容器本体の側へ押込んだ押込姿勢へと姿勢変化させることにより前記容器本体の密封状態が解除されるため、前記容器本体に収容されている液体が前記容器本体から流出可能となる。

【００１４】

つまり、本発明の汚染防止キャップを密封状態の容器本体に装着した場合、未使用時には、前記押込部材を押込むという操作を行わないため、容器開封前の液体と外部空気との接触が阻止され、容器開封時まで確実に密封状態を維持することができる。そして、前記押込部材を押込むという操作によって、前記キャップは前記容器本体に　入され、確実に前記容器本体の密封状態を解除できる。

【００１５】

また、液体を収容した容器本体は、密封状態の容器本体に限らず、前記注液口を予め設けたとしても、前記押込部材を前記注液口に　入させる等して使用時まで密封状態を確実に維持できるように構成してあれば、未使用時には、前記押込部材を押込むという操作を行わないため、容器開封前の液体と外部空気との接触が阻止され、容器開封時まで確実に密封状態を維持することができる。そして、前記押込部材を押込むという操作によって、前記キャップは前記容器本体に　入され、確実に前記容器本体の密封状態を解除できる。

【００１６】

そして、前記容器本体から流出した液体は、前記押込部材側面に設けられている溝部により外部へと導かれる。この時、前記液体が前記溝部以外の経路により外部に流出することを防止することができる。そのため、使用時における容器本体からの液漏れを抑制できる。

【００１７】

さらに、前記基体部材の先端部分に設けられ、前記押込部材に対し外方から密接状態にある前記第一密接部材と前記押込部材とは、前記溝部により導かれた前記液体の圧力により容易に離間するため、前記液体を外部に流出させることができるため、前記液体を容易に供することができる。

【００１８】

また、所望量の液体を外部流出させた後、前記点眼容器の胴部の押圧を停止すると、前記第一密接部材と前記押込部材とは密接状態に戻る。この時、外部空気の前記点眼容器内への流入が起こるのを防止することができる。従って、本構成のキャップを適用することにより、所望量の液体を外部流出させた後には、外部空気が容器本体内に流入する経路が遮断されるため、容器開封後に外部の空気に含まれる微生物等の点眼容器内への取り込みを防ぐことができる構成となり、容器開封後における容器内汚染の防止が可能となる。

【００１９】

（構成２）

本発明に係る汚染防止キャップの第２特徴構成は、上記第１特徴構成に加えて、前記押込部材は、前記容器本体の側の一端部を針状に形成してある点にあり、その作用効果は以下の通りである。

【００２０】

つまり、使用時まで無菌状態を確実に維持できる密封容器であっても、前記押込部材において、前記容器本体の側の一端部を針状に形成することで、前記押込部材を非押込姿勢から押込姿勢へと姿勢変化させることにより、容易かつ確実に密封状態を解除することができる。

【００２１】

（構成３）

本発明に係る汚染防止キャップの第３特徴構成は、上記第１又は第２特徴構成に加えて、前記第一密接部材の前記基体部材側への変形を抑制する突出部を、前記基体部材の先端

部分に分散配設してあり、かつ、前記突出部は、前記第一密接部材に近接配置してある点にあり、その作用効果は以下の通りである。

【００２２】

前記押込部材を押込姿勢にした際に、前記押込部材と前記第一密接部材との摩擦により、前記第一密接部材が前記基体部材側へ変形する虞がある。しかし、前記第一密接部材が前記基体部材側へ変形した場合、前記突出部が前記基体部材の先端部に分散配設してあれば、前記第一密接部材と前記突出部と前記基体部材の先端部分の周囲にほぼ均等に当接することになる。そのため、前記第一密接部材が変形したとしても、いびつな変形を起こし難くなる。従って、前記薬液の偏った流出を防止することができる。

さらに、前記突出部が前記第一密接部材に近接配置してあれば、前記第一密接部材が前記基体部材側へ変形しようとした場合、直ちに前記第一密接部材と前記突出部とが当接して前記第一密接部材の動きを止めることができる。そのため、前記第一密接部材が変形したとしても、軽微な変形に抑えることができる。

【００２３】

（構成４）

本発明に係る汚染防止キャップの第４特徴構成は、上記第１～３の何れかの特徴構成に加えて、前記押込部材が押込まれた状態で、前記押込部材と前記基体部材とで保持される密封部材を設けてある点にあり、その作用効果は以下の通りである。

【００２４】

つまり、前記キャップを前記点眼容器に装着したときにおいて、前記基体部材と前記点眼容器（例えば中栓部）とが接する。この時、前記基体部材と前記中栓部とは強固に密着していないため外部空気が流入する虞がある。

【００２５】

本構成では、前記押込部材が押込まれた状態で、前記押込部材と前記基体部材とで保持される密封部材を設けることにより、前記キャップと前記点眼容器との間から流入しようとする外部空気を確実に遮断することができる。そのため、前記点眼容器内部の薬液の空気による汚染を防止することができるため、前記薬液の汚染を効果的に防ぐことができる。

【００２６】

さらに、前記密封部材は、前記押込部材が押込まれた状態で、前記押込部材と前記基体部材とで保持されるため、前記押込部材が押込姿勢になった時に前記押込部材により前記密封部材が押圧されることになる。そのため、前記密封部材の押圧を使用時まで避けることができるため、前記密封部材の形態や外部空気遮断機能を使用時まで劣化させることなく良好に保存することができる。

【００２７】

（構成５）

本発明に係る汚染防止キャップの第５特徴構成は、上記第４特徴構成に加えて、前記基体部材が、第一基体部材と第二基体部材とで構成してあり、前記押込部材を押込む前の状態において、前記密封部材の外周を前記第一基体部材と前記第二基体部材とで固定してある点にあり、その作用効果は以下の通りである。

【００２８】

つまり、前記密封部材の外周を前記第一基体部材と前記第二基体部材とで固定することで、前記密封部材の姿勢を安定させることができる。そのため、前記押込部材を押込姿勢とした時に、前記密封部材が異常な姿勢で前記第一基体部材と前記第二基体部材とで保持されるのを防止することができ、外部空気遮断機能を確実に発揮することができる。

【００２９】

（構成６）

本発明に係る汚染防止キャップの第６特徴構成は、上記第１～５の何れかの特徴構成に加えて、前記オーバーキャップが、キャップ体と、当該キャップ体から切り取り除去される切取部とで形成され、前記切取部を除去した後、前記キャップ体を押込んだ際に前記キ

キャップ体が前記基体部材に当接可能に構成してある点にあり、その作用効果は以下の通りである。

【００３０】

つまり、前記オーバーキャップが、キャップ体と、当該キャップ体から切り取り除去される切取部とで形成されるため、前記切取部を前記キャップ体から除去しない限り、前記キャップ体を前記容器本体側に押込む（押込姿勢）ことができない。

【００３１】

従って、前記点眼容器の使用前は、前記切取部が前記基体部材に当接しているため前記押込部材が押込まれるのを防止することができ、さらに、前記点眼容器の使用時は、前記キャップ体が前記基体部材に当接しているため、前記押込部材が必要以上に押込まれるのを防止することができる。

【発明を実施するための最良の形態】

【００３２】

以下に本発明の実施の形態を図面に基づいて説明する。尚、図面において従来例と同一の符号で表示した部分は同一又は相当の部分を示している。

【００３３】

図１～７に、主として医療用に用いられる点眼具Ｘ及びこの点眼具Ｘを構成する各部材の要部概略図を示す。この点眼具Ｘは、液体として主に医療用点眼液等の薬液を収容可能な容器本体１０を有する点眼容器Ａと、前記点眼容器Ａに着脱自在なキャップＢとから構成してある。

【００３４】

前記点眼容器Ａは、中空円筒状に形成された容器本体に注液筒部を装着したもの、或いは、ブロー成形や真空成形等により注液筒部と容器本体とを一体に形成してある一体成形型点眼容器Ａ等が汎用されている。

本実施例では、例えば図１に示したように、前記注液筒部６の先端に前記注液口６１αを設けた中栓部６１を装着した点眼容器Ａを例示する。従って、容器本体１０と中栓部６１とを合わせたものが点眼容器（中栓付点眼容器）Ａとなる。

【００３５】

ここで、前記中栓付点眼容器Ａ（以下、単に、点眼容器Ａとする）は、前記注液口６１αから前記薬液を滴下投与した後、前記点眼容器Ａ自身の復元性等により形状が前記薬液を滴下投与前の状態に戻ろうとする。この時、投与した薬液の分だけ外部の空気が前記注液口６１αから前記薬液が含まれる前記点眼容器Ａ内部に流入する。

【００３６】

従って、前記注液口６１αから前記薬液を滴下投与した後に、空気が前記点眼容器Ａ内部に流入するのを防止するため、本実施の形態では２つの形態を例示する。

【００３７】

第１の形態として、前記胴部２を蛇腹状に形成するものが挙げられる。このように構成すると、前記薬液を滴下投与した場合に、投与した薬液の分だけ蛇腹部分が縮み、この状態が維持されれば、外部の空気が前記注液口６１αから前記点眼容器Ａ内部に流入するのを防止可能となる。

【００３８】

第２の形態として、前記容器本体１０を外層、内層を有する二重構造にして、外層に外部空気を導入する通気孔を設けたものが挙げられる。この時、内層の構成材料は、外層に比べて形状が復元し難いものを使用するのが好ましい。このように構成すると、前記薬液を滴下投与した後、前記通気孔から外部空気が導入されて前記外層が前記薬液を滴下投与前の状態に戻ったとしても、前記内層は、形状が復元し難いために外部空気が導入されず、前記内層の形状は前記薬液を滴下投与した後の形状を維持できる。そのため、外部の空気が前記注液口６１αから前記点眼容器Ａ内部に流入するのを防止可能となる。

【００３９】

本実施例では、前記胴部２を蛇腹状に形成するものを例示する。

従って、この点眼容器Ａは、内側に　曲する円形状の底部１と、これの周縁に連なる中空円筒状かつ蛇腹状の胴部２と、該胴部２の肩部分２αに連続する円筒状の首部３と、該首部３の上側に連続する注液筒部６とを備えることにより構成してある。前記注液筒部６の外周には、雄ネジ６αを備えてある。そして、前記注液筒部６の先端には、前記注液口６１αを設けた中栓部６１を装着してある。

【００４０】

前記点眼容器Ａの構成材料としては、ポリエチレン、ポリエチレンーポリプロピレン、ポリプロピレン、ポリエチレンテレフタレート、ポリカーボネート等の熱可塑性材料等があり、成形された点眼容器Ａ全体が弾性変形可能に構成してある。

また、前記容器本体１０を外層、内層を有する二重構造にした場合は、外層の構成材料は前記熱可塑性材料とし、内層の構成材料はナイロン、ポリエチレン、ポリプロピレン、ポリエチレンテレフタレート等が適用可能である。

【００４１】

ここで、前記注液筒部６の先端に中栓部６１を設ける構成は、ブロー成形や真空成形等を適用して前記注液筒部６に直接注液口６１αを形成する場合に比べて製造コストが低くなる等の理由により汎用されている。そして、中栓部６１は、外部空気の流入を防止可能にするため、前記注液筒部６と密着するように装着される。従って、後述のキャップにおける押込部材を前記注液口６１αに　入させるように構成すれば、前記点眼容器Ａは点眼時まで密封状態を維持できる点眼具Ｘとなり、点眼時まで前記薬液を確実に無菌状態に保つことができる。

【００４２】

ここで、点眼時まで密封状態を維持できる点眼具Ｘとは、前記注液筒部６において前記注液口を予め設けてキャップの部材により注液口を塞ぐ構成とする形態に限らず、前記注液口に栓をする形態、前記注液筒部６において前記注液口を予め設けない構成とする形態としてもよく、使用時まで密封状態を確実に維持できるものであれば何れの構成であってもよい。

【００４３】

前記キャップＢは、前記点眼容器Ａの雄ネジ６αに着脱自在に螺合するように構成してある。

前記キャップＢの詳細を以下に示す。

【００４４】

つまり、前記キャップＢは、図１に示したように、薬液を収容可能な点眼容器Ａに装着可能な基体部材７と、前記基体部材７に取付け可能なオーバーキャップ８とを備える。当該オーバーキャップ８には、前記基体部材７に対して摺動自在となるよう前記基体部材７に挿入保持され、その側面に前記液体を外部へ導く溝部９αを有すると共に、前記点眼容器Ａの密封状態を解除すべく前記オーバーキャップ８によって前記点眼容器Ａの側へ押込可能な押込部材９と、前記押込部材９に対し外方から密接した状態で前記基体部材７の先端部分７７に設けた第一密接部材１１とを備えている。

【００４５】

以下に前記キャップＢの各部材の構成を詳述する。

【００４６】

（基体部材）

前記基体部材７は、前記薬液を収容している前記点眼容器Ａに装着可能に構成してある。そのため、前記基体部材７の内周部分には、前記雄ネジ６αに螺合自在なネジ溝部７１が形成されている。

【００４７】

また、前記基体部材７には、好適な実施の形態の一例として、前記基体部材７の軸芯方向に貫通する第一連通孔７２を有すると共に、前記第一連通孔７２と連通して前記第一連通孔７２より大径の空間部７３を有する構成とすることが可能である。後述の押込部材９は、前記第一連通孔７２及び前記空間部７３を経ることにより前記基体部材７を貫通して

いる。

【００４８】

また、前記基体部材７には、後述のオーバーキャップ８を装着するための基体部材第一凸状部７４を外表面に設け、さらに、後述の押込部材９が押込姿勢となった時に、この押込姿勢を確保するために、前記基体部材７の内周壁に基体部材第二凸状部７６を設けることが可能である。

【００４９】

前記基体部材７の構成材料としては、ポリプロピレン、及び、ポリエチレン等とすることが可能である。

【００５０】

尚、前記基体部材７と前記点眼容器Ａとの装着は螺合する装着方法に限らず、　合する装着方法も適用可能である。この時、前記雄ネジ６αに該当する部位と、前記ネジ溝部７１に該当する部位には、　合装着可能な構成（例えば凸状部を設ける）が適宜適用可能である。

【００５１】

また、後述の第一密接部材１１の前記基体部材７側への変形を抑制する突出部７９を、前記基体部材７の先端部分に分散配設し、かつ、前記突出部７９は、前記第一密接部材１１に近接配置して構成するのが好ましい。

【００５２】

前記押込部材７を押込姿勢にした際に、前記押込部材７と前記第一密接部材１１との摩擦により、前記第一密接部材１１が前記基体部材７側へ変形する虞がある。しかし、前記第一密接部材１１が前記基体部材７側へ変形した場合、前記突出部７９が前記基体部材７の先端部に分散配設してあれば（図３）、前記第一密接部材１１と前記突出部７９とが前記基体部材７の先端部分の周囲に亘ってほぼ均等に当接することになる。そのため、前記第一密接部材１１が変形したとしても、いびつな変形を起こし難くなる。従って、前記薬液の偏った流出を防止することができる。

さらに、前記突出部７９が前記第一密接部材１１に近接配置してあれば、前記第一密接部材１１が前記基体部材７側へ変形しようとした場合、直ちに前記第一密接部材１１と前記突出部７９とが当接して前記第一密接部材１１の動きを止めることができる。そのため、前記第一密接部材１１が変形したとしても、軽微な変形に抑えることができる。

【００５８】

（オーバーキャップ）

前記オーバーキャップ８は、前記基体部材７に取付け可能に構成してある。前記基体部材７への取付けは、螺合や　合等の方法により実施することができる。この時、前記基体部材７外表面には、前記オーバーキャップ８の螺合或いは　合装着に対応可能なようなネジ溝部、或いは凸状部を形成する。本実施例では　合装着可能にするため、前記基体部材７外表面に基体部材第一凸状部７４、及び前記オーバーキャップ８内側に内側凸状部８１をそれぞれ設けている。

【００５４】

また、前記オーバーキャップ８の好適な実施の形態の一例として、キャップ体８αと、当該キャップ体８αから切り取り除去される切取部８ｂで形成され、前記切取部８ｂを除去した後、前記キャップ体８αを押込んだ際に前記キャップ体８αが前記基体部材７に当接可能に構成することが可能である。

【００５５】

つまり、キャップ体８αと切取部８ｂとで形成されるオーバーキャップ８が前記基体部材７に取付けられており、この時、前記オーバーキャップ８及び前記押込部材９は前記点眼容器Ａ側へ押込まれない非押込姿勢に保たれている。そして、前記切取部８ｂを前記キャップ体８αから切り取ることにより除去し（図２（イ））、その後、前記キャップ体８αを前記点眼容器Ａ側に押込まれる押込姿勢へと姿勢変化させる（図２（ロ））ことにより、前記キャップ体８αが前記基体部材７に当接して、前記押込部材９が必要以上に押込

まれるのを防止することができる。

【００５６】

また、前記オーバーキャップ８は、少なくとも後述の第一密接部材１１を含む前記基体部材７の一部を覆うように前記基体部材７に取付けることが好ましいため、中空円筒状が好適な形態である。

【００５７】

前記オーバーキャップ８の構成材料としては、ポリプロピレン、及び、ポリエチレン等とすることが可能である。

【００５８】

前記オーバーキャップ８の先端の内壁に、前記環状凸部１１αが侵入可能なオーバーキャップ凸部８２を設けることが好ましい。

【００５９】

（押込部材）

前記押込部材９は、前記基体部材７に対して摺動自在となるよう前記基体部材７に挿入保持されている。また、前記押込部材９は、その側面に前記液体を外部へ導く溝部９１を有している。この溝部９１は、前記押込部材９側面に１本、或いは複数本設けることが可能である。上述したように、前記押込部材９は前記基体部材７の前記第一連通孔７２及び前記空間部７３を経て貫通しているが、この時、前記溝部９１が確保されるように前記押込部材９を前記基体部材７の内周側と当接させる。

【００６０】

従って、前記押込部材９は、例えば、図１及び図４に示したように、前記第一連通孔７２と当接する棒状の軸芯部９αと、前記空間部７３の内周面に当接し、かつ前記軸芯部より大径の大径部９ｂとを有する形状とすることが可能である。

【００６１】

そして、前記点眼容器Ａの密封状態を解除するために、前記オーバーキャップ８を前記点眼容器Ａ側に押込むと（図２参照）、前記押込部材９は前記オーバーキャップ８と共に前記点眼容器Ａ側に押込まれる（押込姿勢）。この時、前記押込部材９は、前記点眼容器Ａの前記注液筒部６の先端に設けた中栓部６１へ押圧され、前記中栓部６１の前記注液口６１α内周面をスライド移動する。この時、前記溝部９１が前記薬液が含まれる前記点眼容器内部の空間と連通すると、密封状態を解除することができる。そして、前記点眼容器Ａ内部の薬液は、前記溝部９１から流出可能となる。

【００６２】

ここで、前記押込部材９の形状として、前記点眼容器Ａの側の一端部を針状に形成したものを例示してある。このように構成することで、前記注液筒部６の先端に設けた中栓部６１に注液口６１αが設けられていない完全密封容器の場合であっても、前記中栓部６１に穿孔を生じ易くして前記点眼容器Ａの密封状態を容易に解除することができる。

また、この針状部分の径は小さい方が好ましく、実際には、φ１～３ｍｍ程度の範囲とする。

この際、前記注液筒部６に先端側ほど内径が大となる有底円錐状の凹部を窪み形成しておくと、穿孔によって生じる注液孔の形状や大きさを均一にすることができる。

【００６３】

さらに別の形態として、前記注液口６１αに栓をすることにより密封状態が保たれている形態の容器である場合、前記押込部材９はこの栓を除去可能な形態を適用する。具体的には、前記押込部材９の前記点眼容器Ａ側の一端部が　平な形状になるように成形することが可能である。そして、前記押込部材９を押込んだ際に前記栓を前記点眼容器Ａ内部に押込んで前記注液筒部６から除去できるため、前記点眼容器Ａの密封状態を容易に解除することができる。

【００６４】

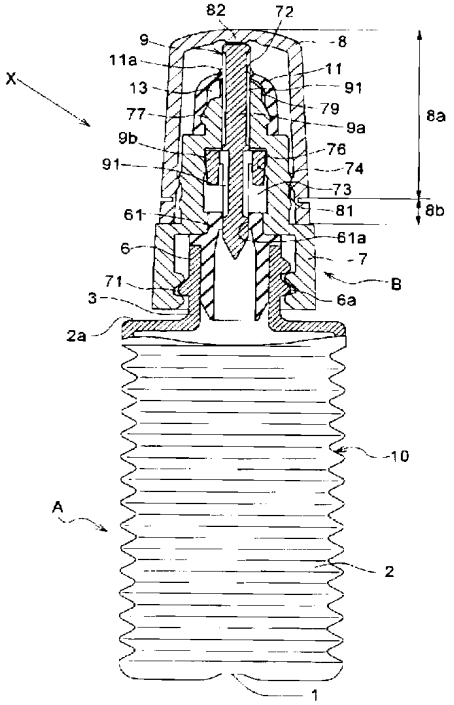
前記押込部材９の構成材料としては、前記点眼容器Ａの密封状態を解除するために相応しい材料、例えば、前記点眼容器Ａより丈夫な熱可塑性樹脂等が適用可能である。

【００６５】
（第一密接部材）
前記第一密接部材１１は、前記押込部材９に対し外方から密接した状態で前記基体部材７の先端部分７７に固定してある。しかし、前記第一密接部材１１は、前記押込部材９に対しては単に密接しているだけで固定されていない。従って、前記第一密接部材１１と前記押込部材９とは容易に離間可能に構成してある。（図５参照）。
【００６６】
この時、前記第一密接部材１１と前記押込部材９と前記基体部材７とで囲まれた空間である第二空間部１３を設けてあると、前記薬液を、外部に流出する前にこの第二空間部１３で一時貯留することができる。
【００６７】
ここで、前記第一密接部材１１の前記基体部材７側への変形を抑制する突出部７９を、前記基体部材７の先端部に分散配設してあり、かつ、前記突出部７９は、前記第一密接部材１１に近接配置してある場合、前記突出部７９どうしの間と前記第一密接部材１１と前記押込部材７とで囲まれた空間は、大空間部となっている。一方、前記突出部７９は、前記第一密接部材１１に近接配置してあるため、前記突出部７９と前記第一密接部材１１と前記押込部材とで囲まれた空間は、小空間部となっている。
そのため、前記薬液を一時貯溜することができる空間を前記大空間部と前記小空間部とで確保することができる。
【００６８】
また、薬液の切れを良くして１滴量を一定（１滴量当たり２５～５０μＬの範囲内）にするため、前記第一密接部１１と前記押込部材９とが密接する部位の外方側において、環状凸部１１αを設けることが好ましい。
【００６９】
そして、前記第一密接部材１１を、前記基体部材７の先端部分７７に固定し、かつ、前記押込部材９とは容易に離間可能な構成とするため、前記第一密接部材１１は、ゴム等の弾性材により形成されるのが好ましい。
【００７０】
以上のように前記キャップＢは、前記基体部材７、前記オーバーキャップ８、前記押込部材９、及び前記第一密接部材１１により構成され、前記キャップＢがこのような構成を有することにより液体を収容した密封状態の点眼容器Ａを使用することができる。
【００７１】
つまり、上述した構成を有する点眼容器Ａ及びキャップＢから成る点眼具Ｘを使用する際には、前記オーバーキャップ８を前記点眼容器Ａ側に押圧して前記押込部材９を非押込姿勢から押込姿勢へと姿勢変化させることにより前記点眼容器Ａの密封状態が解除される。この時、前記溝部９１が前記薬液が含まれる前記点眼容器内部の空間と連通することにより前記点眼容器Ａの密封状態が解除される。これにより前記点眼容器Ａに収容されている薬液は前記点眼容器Ａから流出可能となる。従って、前記点眼容器Ａの密封状態は、前記押込部材９を押込むという単純な操作により容易に解除することができる。
【００７２】
そして、前記オーバーキャップ８を前記基体部材７から離脱させた状態で、前記点眼容器Ａの胴部２を指等により押圧することにより、前記点眼容器Ａから薬液を流出させる。前記点眼容器Ａから流出した薬液は、前記押込部材９に設けられている前記溝部９１により外部へと導かれる。この時、前記薬液は前記溝部９１以外の経路により外部に流出することがないため、前記点眼容器Ａからの液漏れを防止することができる。
【００７３】
さらに、前記溝部９１により導かれた前記薬液は前記第二空間部１３において一時貯留され、前記薬液が前記第二空間部１３に充満すると、前記薬液の圧力が陽圧となって密接状態にある前記第一密接部材１１と前記押込部材９とは容易に離間し、前記薬液が外部に流出する（図５）。

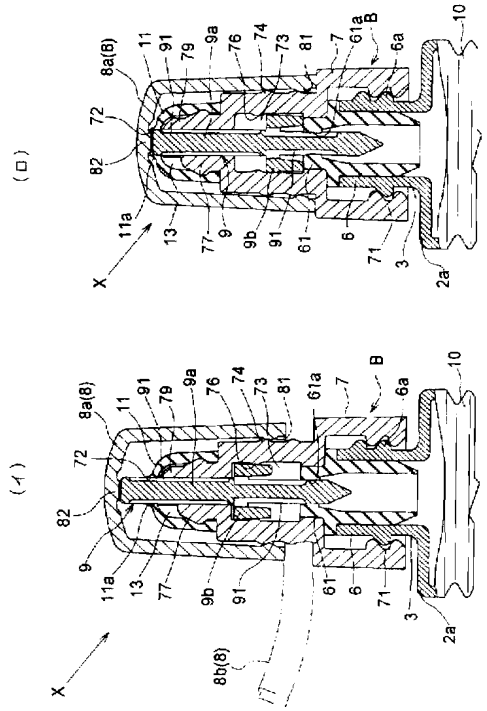
【００７４】
また、所望の薬液を外部流出させた後、前記点眼容器Ａの胴部２の押圧を停止すると、前記第二空間部１３内に充満した薬液は通常の圧力に戻るため前記第一密接部材１１と前記押込部材９とは密接状態に戻る。この時、前記薬液の外部流出が停止すると共に、外部空気の前記点眼容器Ａ内への流入が起こるのを防止することができる。従って、容器開封後に外部の空気に含まれる微生物等の点眼容器内への取り込みを防ぐことができる構成となり、容器開封後における容器内汚染の防止が可能となる。
【００７５】
〔別実施例１〕
上述した実施例において、前記押込部材９が押込まれた状態で、前記押込部材９と前記基体部材７とで保持される密封部材１００を設けることが可能である（図６参照）。
【００７６】
前記注液口６１ａを設けた中栓部６１と注液筒部６との装着は、通常、強固に密着しているため、外部空気が中栓部６１と前記注液筒部６との間から侵入することは殆ど無い。
一方、前記キャップＢを前記点眼容器Ａに装着したときにおいて、前記基体部材７と前記中栓部６１とが接する。この時、前記基体部材７と前記中栓部６１とは、前記中栓部６１と前記注液筒部６との装着ほど強固に密着していないため、前記基体部材７と前記中栓部６１との間から外部空気が流入する虞がある。
【００７７】
この時、前記押込部材９が押込まれた状態で、前記押込部材９と前記基体部材７とで保持される密封部材１００を設けて構成することにより、前記基体部材７と前記中栓部６１との間から流入しようとする外部空気を確実に遮断することができる。そのため、前記点眼容器Ａ内部の薬液の空気による汚染を効果的に防止することができる。
【００７８】
さらに、前記密封部材１００は、前記押込部材９が押込まれた状態で、前記押込部材９と前記基体部材７とで保持されるため、前記押込部材９が押込姿勢になった時に前記押込部材９により前記密封部材１００が押圧されることになる。そのため、前記密封部材１００の押圧を使用時まで避けることができるため、前記密封部材１００の形態や外部空気遮断機能を使用時まで劣化させることなく良好に保存することができる。
【００７９】
尚、前記密封部材１００は、例えばゴムパッキン、発泡シートで構成すれば、外部空気を確実に遮断することができるため好ましい。
【００８０】
〔別実施例２〕
上記別実施例１に記載の構成において、前記基体部材７が、第一基体部材７ａと第二基体部材７ｂとで構成してあり、前記押込部材９を押込む前の状態において、前記密封部材１００の外周を前記第一基体部材７ａと前記第二基体部材７ｂとで固定することが可能である（図７参照）。
【００８１】
このように前記密封部材１００の外周を前記第一基体部材７ａと前記第二基体部材７ｂとで固定することで、前記密封部材１００の姿勢を安定させることができる。そのため、前記押込部材９を押込姿勢とした時に、前記密封部材１００が異常な姿勢で前記第一基体部材７ａと前記第二基体部材７ｂとで保持されるのを防止することができ、外部空気遮断機能を確実に発揮することができる。
【００８２】
尚、本発明は上記実施形態に限定されるものではなく、同様の作用効果を奏するものであれば、各部構成を適宜変更することが可能である。
【図面の簡単な説明】
【００８３】
【図１】本発明のキャップと容器本体とが螺合一体化した状態を示す概略図

【図２】非押込姿勢から押込姿勢へと姿勢変化させた時の概略図（イ）非押込姿勢（オーバーキャップから切取部を除去）（ロ）押込姿勢（キャップ体が基体部材に当接）
【図３】基体部材の先端部分に分散配設された突出部の概略図
【図４】押込部材の概略図
【図５】点眼時において、薬液が滴下する時の要部概略図
【図６】押込部材と基体部材との間に密封部材を設けた時の要部概略図
【図７】基体部材を第一基体部材と第二基体部材とで構成し、密封部材の外周を第一基体部材と第二基体部材とで固定した時の要部概略図
【図８】従来の点眼具の断面概略図
【符号の説明】
【００８４】
７　基体部材
７７　先端部分
８　オーバーキャップ
９　押込部材
９１　溝部
１０　容器本体
１１　第一密接部材
Ａ　点眼容器
Ｂ　キャップ
Ｘ　点眼具

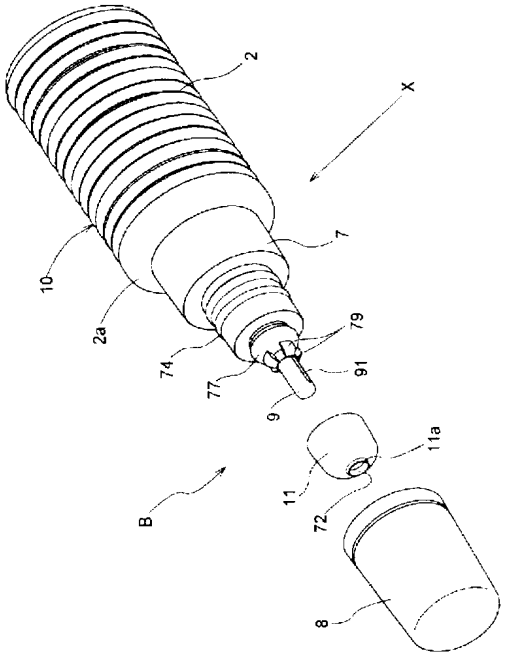
【図１】



【図２】



【図３】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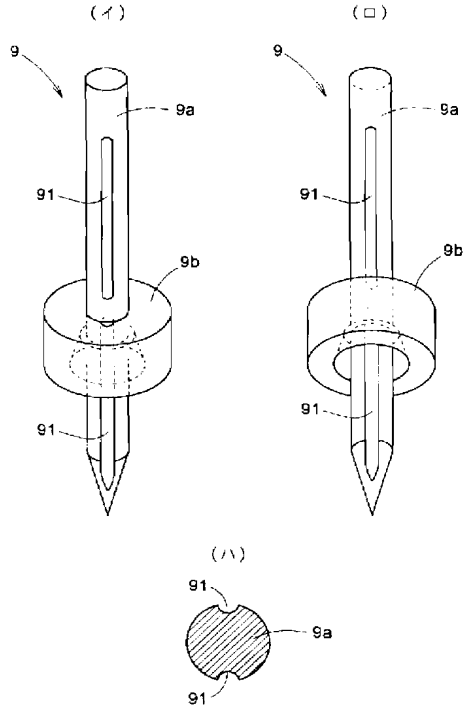
8

【図４】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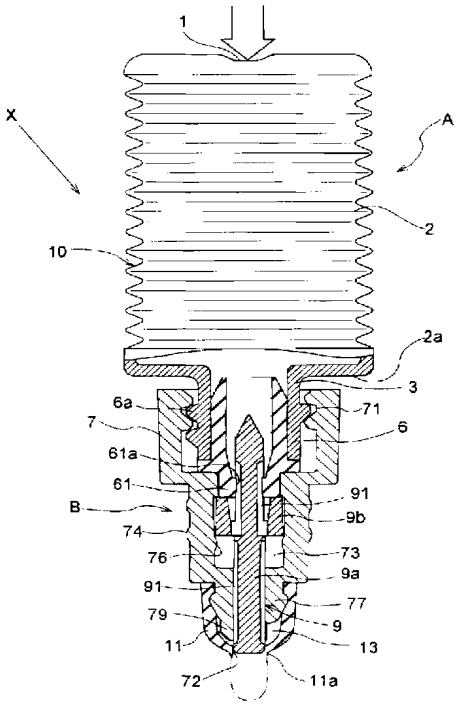
【図５】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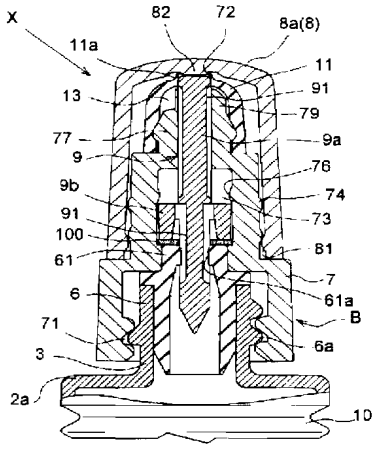
【図６】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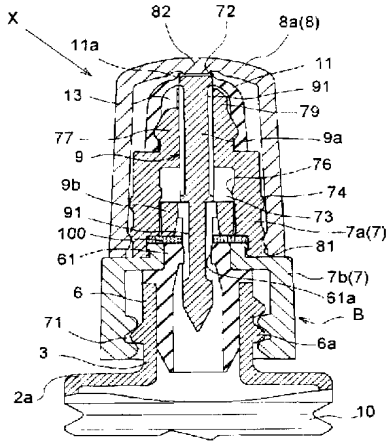
【図７】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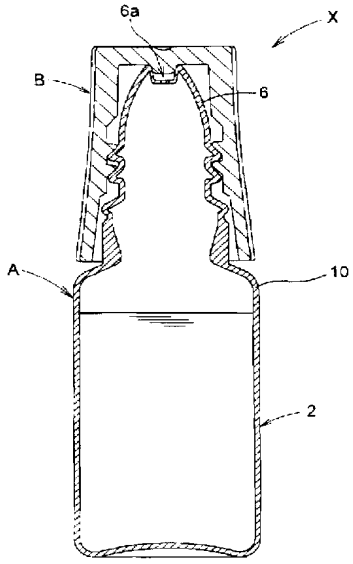
【図８】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フロントページの続き

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